

**WHAT IS CLAIMED IS:**

1 1. A vehicle door handle device comprising:  
2 a frame equipped on a door panel of a vehicle door;  
3 a handgrip having a first end portion rotatably mounted on the frame and a  
4 second end portion forming an operation portion linked with a door lock  
5 mechanism, the handgrip being rotatable within a predetermined angle to operate  
6 the door lock mechanism and effect opening of the vehicle door when the  
7 operation portion of the handgrip is moved to rotate the handgrip relative to the  
8 frame;  
9 a projection formed on one of the frame and the first end portion of the  
10 handgrip; and  
11 a groove formed on the other of the frame and the first end portion of the  
12 handgrip, the projection being positioned in the groove to move within the groove  
13 when the operation portion of the handgrip is moved to rotate the handgrip relative  
14 to the frame, the projection being engageable with a periphery of the groove to  
15 inhibit dislocation of the handgrip from the frame.

1 2. The door handle device according to Claim 1, wherein the frame  
2 comprises a first base member and a separate second base member, the first and  
3 second base members being spaced apart from one another.

1           3.     The door handle device according to Claim 2, wherein the  
2     projection is provided on the first base member and the groove is provided on the  
3     first end portion of the handgrip.

1           4.     The door handle device according to Claim 1, wherein the  
2     projection is provided on the frame and the groove is provided on the first end  
3     portion of the handgrip.

1           5.     The door handle device according to Claim 1, wherein the groove  
2     includes an inclined surface portion and a fitting portion, the projection being  
3     positioned in the fitting portion, and the fitting portion having oppositely located  
4     peripheral portions defining limits of the predetermined angle of rotation of the  
5     handgrip.

1           6.     The door handle device according to Claim 1, wherein the frame  
2     includes an integrally formed shaft portion and the first end portion of the  
3     handgrip includes an open-ended slot receiving the shaft portion, the handgrip  
4     rotating about the shaft portion when the operation portion of the handgrip is  
5     moved away from the frame to rotate the handgrip relative to the frame.

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1           7.    A vehicle door handle device comprising:  
2               a frame equipped on a door panel of a vehicle door;  
3               a handgrip having a first end portion rotatably mounted on the frame and a  
4               second end portion forming an operation portion of the handgrip that is linked  
5               with a door lock mechanism, the handgrip being rotatable within a predetermined  
6               angle to operate the door lock mechanism and effect opening of the vehicle door  
7               when the operation portion of the handgrip is moved away from the frame to  
8               rotate the handgrip relative to the frame;  
9               a projection formed on one of the frame and the second end portion of the  
10              handgrip; and  
11              a groove formed on the other of the frame and the second end portion of  
12              the handgrip, the projection being positioned in the groove to move within the  
13              groove when the operation portion of the handgrip is moved away from the frame  
14              to rotate the handgrip relative to the frame, the projection being engageable with a  
15              periphery of the groove to inhibit dislocation of the handgrip from the frame.

1           8.    The door handle device according to Claim 7, wherein the second  
2               end portion of the handgrip includes a leg portion provided with the groove.

1           9.    The door handle device according to Claim 8, wherein the leg is  
2               provided with a projecting portion at one end of the groove that engages the

3 projection to define a limit of the predetermined angle when the operation portion  
4 of the handgrip is moved away from the frame.

1 10. The door handle device according to Claim 7, wherein the  
2 projection is a first projection and the groove is a first groove, and including a  
3 second projection and a second groove, the second projection being formed on one  
4 of the frame and the second end portion of the handgrip, the second groove being  
5 formed on the other of the frame and the second end portion of the handgrip, the  
6 second projection being positioned in the second groove.

1 11. The door handle device according to Claim 7, wherein the first end  
2 portion of the handgrip is provided with a leg portion insertable into a supporting  
3 portion of the frame to define a rotation center portion of the handgrip, the leg  
4 portion of the handgrip being inserted in an inserting direction to be completely  
5 inserted into the supporting portion of the frame, one end of the groove being  
6 open in the inserting direction.

1 12. A vehicle door handle device comprising:  
2 a frame equipped on a door panel of a vehicle door;  
3 a handgrip mounted on the frame through insertion of the handgrip into the  
4 frame in an insertion direction, the handgrip having a first end portion rotatable  
5 relative to the frame about a rotation center portion and a second end portion

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6 forming an operation portion linked with a door lock mechanism, the handgrip  
7 being rotatable relative to the frame within a predetermined angle at the rotation  
8 center portion to operate the door lock mechanism and effect opening of the  
9 vehicle door when the second end portion is moved away from the frame; and  
10 a projection and a groove provided between the frame and the handgrip,  
11 the projection being positioned in the groove, the projection being movable in the  
12 groove during rotation of the handgrip and being engageable with a boundary of  
13 the groove in the insertion direction of the handgrip.

1 13. The door handle device according to Claim 12, wherein the frame  
2 comprises a first base member and a separate second base member, the first and  
3 second base members being spaced apart from one another.

1 14. The door handle device according to Claim 13, including a shaft  
2 portion which engages a recessed portion to form the rotation center portion.

1 15. The door handle device according to Claim 14, wherein the  
2 projection is formed on one of the first base member and the first end portion of  
3 the handgrip, and the groove is formed on the other of the first base member and  
4 the first end portion of the handgrip.

1           16.   The door handle device according to Claim 14, wherein the shaft  
2           portion is formed on the first base member.

1           17.   The door handle device according to Claim 12, wherein the  
2           projection is formed on one of the frame or the operational portion, and the  
3           groove is formed on the other of the frame and the operation portion.

1           18.   The door handle device according to Claim 17, wherein the groove  
2           further comprises an opening portion opening in the inserting direction of the  
3           handgrip.

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